Communicable Diseases Case Reporting and Investigation Guidance for Clinicians

MEASLES

Report suspect measles cases

Measles is a Category I Reportable Disease according to Wisconsin Department of Public Health (WDPH) regulations (DHS 145.04). **IMMEDIATELY BY TELEPHONE**, health care providers should report the identification of a suspect case to the local health department officer or designee in which the patient resides. LHD contact information can be found here: https://www.dhs.wisconsin.gov/lh-depts/counties/index.htm. In addition to the immediate report, submit the case online through the Wisconsin Electronic Disease Surveillance System (WEDSS) within 24 hours or by fax using an Acute and Communicable Disease Case Report (F44151).

For after-hours, weekends, and holidays, please contact the DHS epidemiologist on call at 800-943-0003. To contact the Bureau of Communicable Diseases (BCD) during routine business hours (8 a.m. – 4 p.m.), please use the main number 608-267-9003.

Laboratory testing for suspect patient

Laboratory confirmation is essential for all sporadic measles cases and all outbreaks. Obtain both a nasopharyngeal and/or throat swab and a serum sample from patients suspected to have measles at first contact with them. All measles lab specimens should be sent to the Wisconsin State Laboratory of Hygiene (WSLH).

- **PCR testing:** Detection of measles RNA in a clinical specimen can provide laboratory confirmation of infection.
  - Preferred specimens: Throat **AND** nasopharyngeal swab should be collected as soon as measles is suspected (preferably within 3 days of rash onset, but no later than 10 days after rash onset) for the detection of the measles virus.
  - Synthetic swabs (e.g., Dacron) are required for specimen collection. Do not use cotton or calcium alginate swabs as they may be inhibitory to enzymes used in PCR. Place **both** swabs in a single tube of virus transport medium; any commercially available virus transport medium or universal transport medium is acceptable. Maintain specimen at refrigerator temperature prior to and during transport.
- While the virus can be present in the urine a few days before rash appears and begins to diminish a few days following rash onset, it is not the preferred specimen for detection by PCR. Only in certain situations (e.g. with consultation from the state immunization program or WSLH), would a urine specimen be recommended in addition to the throat and nasopharyngeal swab. **Serology:**
  - The detection of serum measles IgM antibodies indicates recent measles infection or recent measles vaccination. Ideally, a specimen would be obtained during the first encounter with the patient. IgM often will yield positive results on the day of rash onset. If the result is negative and the patient has a generalized rash for greater than 72 hours, a second serum should be collected and retested for measles IgM.
  - A four-fold or greater rise in serum measles IgG antibody level between acute and convalescent specimens indicates recent measles infection. However, false negative results may occur among previously vaccinated persons because acute IgG titers may already be high.

Clinical presentation

Measles is an acute viral respiratory illness. It is characterized by:

- A prodrome of fever (as high as 105°F), malaise, and cough, coryza, and conjunctivitis (three "C"s)
- A pathognomonic enanthema or Koplik spots (very difficult to distinguish)
- Followed by a maculopapular rash that usually appears about 14 days after a person is exposed. The rash spreads from the head to the trunk to the lower extremities.

- Patients are considered to be contagious from 4 days before to 4 days after the rash appears (onset is day zero).

Patient management

There is no specific antiviral therapy for measles. Medical care is supportive and to help relieve symptoms and address complications such as bacterial infections.

Communicability

Measles is one of the most contagious of all infectious diseases. Up to 9 out of 10 susceptible individuals with close contact to a measles patient will develop measles.

- The virus is transmitted by direct contact with infectious droplets or airborne spread when an infected person breathes, coughs, or sneezes.
- Measles virus can remain infectious in the air for up to 2 hours after an infected person leaves an area.
- Infected people should be isolated for 4 days after they develop a rash; airborne precautions should be followed in healthcare settings.
- Because of the possibility (albeit low) of MMR vaccine failure in healthcare providers exposed to infected patients, providers should observe airborne precautions in caring for patients with measles.

Complications

Common complications from measles include otitis media, bronchopneumonia, laryngotracheobronchitis, and diarrhea. Even in previously health children, measles can cause serious illness requiring hospitalization.

Recommended exclusion

Exclude and isolate the patient through the fourth day after rash onset (day of rash onset is considered day zero).

Proof of immunity to measles (non-healthcare personnel)

Presumptive evidence of immunity to measles includes any one of the following:

- Written documentation of one or more doses of a measles-containing vaccine administered on or after the first birthday for preschool-age children and adults not considered high risk.
- Written documentation of two doses of measles-containing vaccine for school-age children and adults at high risk, including students at post-high school secondary educational institutions, healthcare personnel, and international travelers.
- Laboratory evidence of immunity or laboratory confirmation of disease.
- Birth in the United States before 1957. (This should not be considered evidence of immunity for healthcare personnel.)

Proof of immunity to measles (healthcare personnel)

- All staff, regardless of year of birth, should have proof of two doses of measles vaccine or serologic proof of immunity.
- Staff who have not received two doses of MMR vaccine and do not have serologic proof of immunity should:
    - Receive a dose of MMR vaccine if one or more cases of measles occur in the facility.
    - Receive a second dose of MMR vaccine 28 days after receipt of the first dose, if receipt of two doses has not already been documented.

Resources

CDC's Manual for the Surveillance of Vaccine-Preventable Diseases, Chapter 7: Measles

CDC's Clinical Overview of Measles (Rubeola)